

## **Green Campus Governance for Promoting Sustainable Development in Institutions of Higher Learning-Evidence from a Theoretical Analysis**

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### **Abstract**

This study examines the current Green practice implementation in Institutions of Higher Learning (IHL) towards attaining sustainable development. Accordingly, a theoretical analysis was conducted based on primary data from Green practice documents and secondary data from review of prior studies. Based on the findings from the theoretical data, a Green campus governance model grounded on economic, social and environmental dimension of sustainability was developed to further extend the collaboration among sustainability practitioners by providing incorporated data on factors that influences sustainable development in universities. Accordingly, findings from this study present the declarations and summits, background, importance and issues faced by institutions of higher learning in attaining sustainable development. Moreover, evidence from this study presents sixteen universities in Malaysia that currently implements Green practices. Respectively, the derived factors in the developed Green campus governance model can be employed as an assessment tool for benchmarking sustainable development in universities.

**Keywords:** Sustainable development policies; Green growth; Green campus governance; Green policies; Institutions of higher learning.

### **1. Introduction**

With environmental degradation, climatic changes, and global warming evolving as a major concern, sustainable development is rapidly changing from a simple issue into an important agenda (Jonah and Turan, 2016). Institutions of Higher Learning (IHL) helps educate imminent decision makers and also creates gap connection concerning research and disseminate knowledge to the society. Thus, IHL are uniquely intellectual contributors to humanity's efforts to attain sustainability, through consultancies, trainings, practices of skills and knowledge exchange (Sonetti et al., 2016). Hence, practitioners in universities such as sustainability managers, environmental manager and committee can assist in providing multidisciplinary Green technical solutions in achieving sustainable development across IHL. Therefore, IHL are required to implement Green practices in supporting sustainable development for CO<sub>2</sub> reduction, energy usage decrease, cost incurred lessening, natural resource conservation, ethical waste disposal, etc. (Mat et al., 2011; Junior, 2019).

According to Saadatian et al. (2013) Malaysia is one of the countries devoted to support sustainable development in IHL. This is evident based on several universities having their in-house Green centers that promote awareness on the importance of Green practice implementation within campus society. Thus, the interest for sustainable development

attainment is gradually growing within Malaysia (Azlin et al., 2016). However, most universities are still lagging behind in implementing Green practices for attaining sustainability as part of their institutions policy, even though sustainability has been on the agenda of IHL since 1992 in Rio Earth Summit, progress is still slow (Jonah and Turan, 2016). Likewise, there exists constant motivation on IHL to integrate ecological-friendly practices into their day to day processes based on numerous sustainability declarations related to Green campus governance policies. This was supported by Sonetti et al. (2016) who mentioned that campus Greening is mainly the first strategy universities incorporates for sustainable development attainment. Thus, IHL in Malaysia are committed in reducing Carbon dioxide (CO<sub>2</sub>) emissions by contributing to reduce global warming (Ramli et al., 2014), but sustainable development attainment challenges the current governance, strategies as well as predominant initiatives in universities (Tilbury, 2012; Nifa et al., 2016).

Given the increasing worldwide awareness on IHL role towards promoting sustainability attainment, an increasing number of universities in Malaysia are committing themselves to promote sustainable development. But according to Nejati and Nejati (2013) numerous university management, stakeholders and practitioners are unaware of Green campus initiatives and this has led to most universities not implementing ecological-friendly practices (Foo, 2013). Moreover, sustainable development in IHL is a growing field of consideration and practice, yet the implementation of Green practices in university operations is still considered an issue (Darus et al., 2009; Hafezi et al., 2017). Likewise, due to the nature of bureaucratic and hierarchical organization, IHL management and administration experiences difficulty in deploying effective Green governance policies to address sustainability attainment (Hooi et al., 2011). Respectively, Green campus governance was initiated to achieve sustainability goals in supporting university into having a sustainable lifestyle (Zakaria et al., 2016). At the moment propaganda on sustainable development is been initiated and socially promoted by practitioners in IHL, but there are fewer models that provide practitioners with the factors which are to be adopted in attaining sustainability within IHL (Junior et al., 2018).

Therefore, this study aims to investigate the current Green practices implemented in selected IHL in Malaysia whilst exploring important factors to be considered for sustainability attainment within universities. The factors can support sustainability practitioners in providing guide for sustainable development and also serve as an effective tool for evaluating and monitoring of the current Green practices implemented in IHL. Moreover, the factors also provide explicit information to support appropriate decision-making and provide information to sustainability practitioners in regards to environmental issues. The organization of this paper is as follows, section 2 presents the literature review. Section 3 is the methodology. Section 4 is the results. Section 5 is the discussion and implications. The final section is the conclusion.

## **2. Literature Review**

This paper employed a theoretical analysis by presenting a description of Green practice initiatives implemented for sustainable development in Malaysia institutions of higher learning. Simultaneously, this study reviews the secondary data on prior studies of Green

practice implemented and primary data on Green practice document employed in sixteen selected universities across Malaysia. The syntheses of secondary and primary data provided a general background on sustainability, which was used in the development of the Green campus governance model.

### ***2.1. Green Documents Review***

The primary data was utilized from sixteen universities in Malaysia to provide insight on Green practices implemented, thereby investigating various ecological-friendly initiatives being deployed in the selected university campuses. Accordingly, documents on Green ICT, Green IT, Campus Greening, and sustainability documents from various universities in Malaysia was retrieved, extracted and synthesized to identify the best practice implemented by these universities. Most of these documents were provided by the universities and others documents were downloaded from the university sustainability websites. Although, we are bounded by copyright infringement act as such these documents cannot be published or revealed to the public due to copyright legal issues.

### ***2.2. Theoretical Review Process***

This sub-section reviews literature comprises of published journals, conference proceedings and web links mostly related to sustainability attainment in IHL. The review was conducted to gather detailed information concerning Green practices that had been implemented in university campuses across Malaysia regarding issues experienced in implementing Green initiatives and potential approaches to overcome the impending issues. Hence, the review extract scientific literature related to Green initiatives and tools for sustainable development in universities. Respectfully, a theoretical review identifies past research activities in a specific research area of interest and presents research contributions and limitations in the research domain being investigated (Webster and Watson, 2002; Kitchenham and Charters, 2007). Thus, Figure 1 illustrates the theoretical review protocol that was implemented in this study.

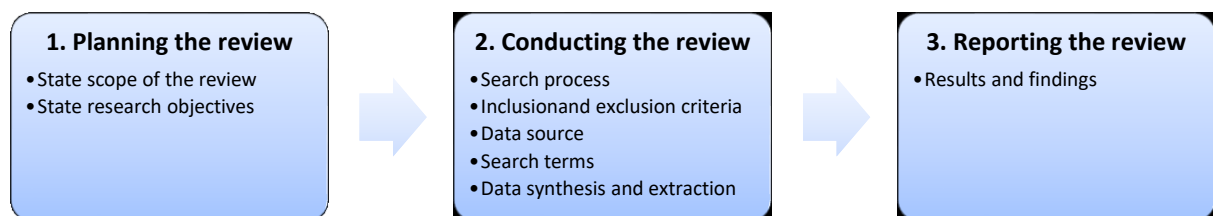


Figure 1 Theoretical review protocol.

Figure 1 shows the theoretical review protocol that was carried out in this study. Each of phases and activities were carried out in this study. The phases and activities adopted in this

study are similar to the phases implemented by Webster and Watson (2002); Kitchenham and Charters (2007) in their guide to writing a review paper.

### ***2.2.1. Planning the Theoretical Review***

The scope of this study focus only publications related to factors, metrics, indicators, practices and tools for sustainable development in universities from January 2007 till May 2019. Moreover, the research objectives of this study entails;

- i. To describe the importance and issues of sustainable development in IHL.
- ii. To identify existing declarations, summits and Green standards initiated across the years to support universities towards sustainable development attainment.
- iii. To present Malaysia universities that are currently implementing Green practices for sustainable development.
- iv. To identify the factors to be considered in provide data to sustainability practitioners in IHL.
- v. To propose the Green campus governance model to improve university's current Green practice being implemented towards achieving sustainable development.

### ***2.2.2. Conducting the Theoretical Review***

This phase describes how the authors carried out the theoretical review by identifying relevant prior studies to accomplish the specified research objectives (see Section 2.2.1). Thus, this phase involved the search procedure that was employed, the inclusion and exclusion criteria, the data source where the papers were retrieved, the search terms, and lastly the data synthesis and extraction activities being deployed in this study.

#### ***a. Search Process***

The search process was carried out from 1<sup>st</sup> December 2018 to 12<sup>th</sup> May 2019. During this period that authors queried several leading journals and conference databases as seen in Table 2 manually to search for relevant papers relating to the Green practice and tools for sustainable development in universities. This was carried out by the authors in other to get an in-depth understanding of the present state of sustainable development in Malaysia universities. The reviewed papers retrieved were examined by the author in identifying the factors to be considered by IHL for sustainable development attainment in universities.

#### ***b. Inclusion and Exclusion Criteria***

The inclusion and exclusion criteria are used to confirm that the appropriate and relevant journals articles and conference proceeding papers included in the review process. The inclusion and exclusion criteria are shown in Table 1.

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
The abstract and content is written in English Language.	In form of book chapter, book and presentation slides.
Was published within the year January 2007 till May 2019.	The abstract and content is written in languages other than English.
Focus on sustainability, Green practice assessment in university campuses.	Journals articles and conference proceeding papers that did not match the inclusion criteria.
The study is published or accepted in press in a journal or conference proceeding.	Did not fully focus on sustainability, Green practice in university campuses.
Reported review papers on Green practice in university campuses.	Is not related university campuses practice domain.
Relates to sustainability attainment in university campuses.	The patterns are not described in detail, or a structured template is lacking.

Accordingly, Table 1 depicts the inclusion and exclusion criteria that were employed by the authors to screen selected papers. If any research paper meets all the inclusion criteria, it is added in the study to help in accomplishing the research objectives mentioned in Section 2.2.1. However, if the paper meets any one of the exclusion criteria it was excluded.

### c. Data Source

In order to locate and retrieve suitable and relevant material searches were performed directly on key electronic databases to get related papers required to accomplish the research objectives of this study. Thus, Table 2 shows the sources utilized to retrieve journal articles and conference proceeding papers for this study.

Table 2 Data source

Data sources	Data source URL
Google Scholar	<a href="https://www.scholar.google.com">https://www.scholar.google.com</a>
Scopus	<a href="https://www.scopus.com">https://www.scopus.com</a>
ISI Web of Science	<a href="https://www.webofknowledge.com">https://www.webofknowledge.com</a>
Wiley InterScience	<a href="http://onlinelibrary.wiley.com/">http://onlinelibrary.wiley.com/</a>
Research Gate	<a href="https://www.researchgate.net/">https://www.researchgate.net/</a>
Springer Link	<a href="http://link.springer.com/">http://link.springer.com/</a>
Science Direct	<a href="http://www.sciencedirect.com/">http://www.sciencedirect.com/</a>
ACM Digital library	<a href="http://dl.acm.org/">http://dl.acm.org/</a>
IEEE Xplore	<a href="http://ieeexplore.ieee.org/Xplore/home.jsp">http://ieeexplore.ieee.org/Xplore/home.jsp</a>
Emerald	<a href="http://www.emeraldinsight.com/">http://www.emeraldinsight.com/</a>

Table 2 outlines the ten different data sources utilized to query to retrieve relevant papers related to this study. Each of this data sources was search by the authors over the period of 2018-2019.

### d. Search Terms

This sub-section describes the search keywords based on the guidelines by Webster and Watson (2002). A search keyword string was constructed by the authors using relevant keywords related to the research objectives. The resulting Boolean search strings were used in retrieving relevant papers from the data sources shown in Table 2. The authors came up with different search terms or keywords that were used to query the data sources individually. The

resulting Boolean search strings includes “Green practice in universities” or “Green higher education” or “Green campus” or “Green in institutions” or “Sustainability metrics” or “Eco-friendly metrics” or “Green practice metrics” or “Sustainability practice metrics” or “Green initiatives in universities” or “Sustainability initiatives in universities” or “Environmental practice in universities” or “Ecological initiatives in universities” or “Environmental strategies in universities” or “Green in campuses” or “Campus sustainability”.

***e. Data Synthesis and Extraction***

This sub-section describes how important and relevant data are retrieved from the selected journal articles and conference proceeding papers. However, before the authors synthesized and extracted the papers to be used for the review. The authors checked for similar studies to ensure there are no duplicates. Thus, if the same study is retrieved from more than two different data sources with same authors and same title, only one study would be selected for inclusion in the study. Commonly, the most recent and comprehensive study will be selected. This was carried out to reduce data redundancy. Accordingly, the relevant data were synthesized and extracted from the literatures of the selected studies based on Table 3 which shows the data synthesis and extraction terms, employed in this study to retrieved relevant data related to the research objectives.

Table 3 Data synthesis and extraction terms

<b>Data synthesis and extraction terms</b>	<b>Description</b>
Main Information	This includes the paper title and the author(s) of the selected paper.
Paper Year	Basically outlines the year the paper was published (within 2007 till 2018)
Paper Type	This refers to either the study is a journal article or conference proceeding paper.
Research Objective	Retrieves the research aim and objective(s) of the selected paper.
Research Field	Documents the field of the paper, either Green practice or sustainability practice integration in university campuses.
Research Contribution	Retrieves the contribution of the study selected. This synthesized and extracted term is important because it helps to accomplish the research objectives.
Research Implication	Retrieves mainly the limitation, implication and future works the researchers’ intents to resolve in future.

Next, the paper selection process included for this study is shown in Figure 2.

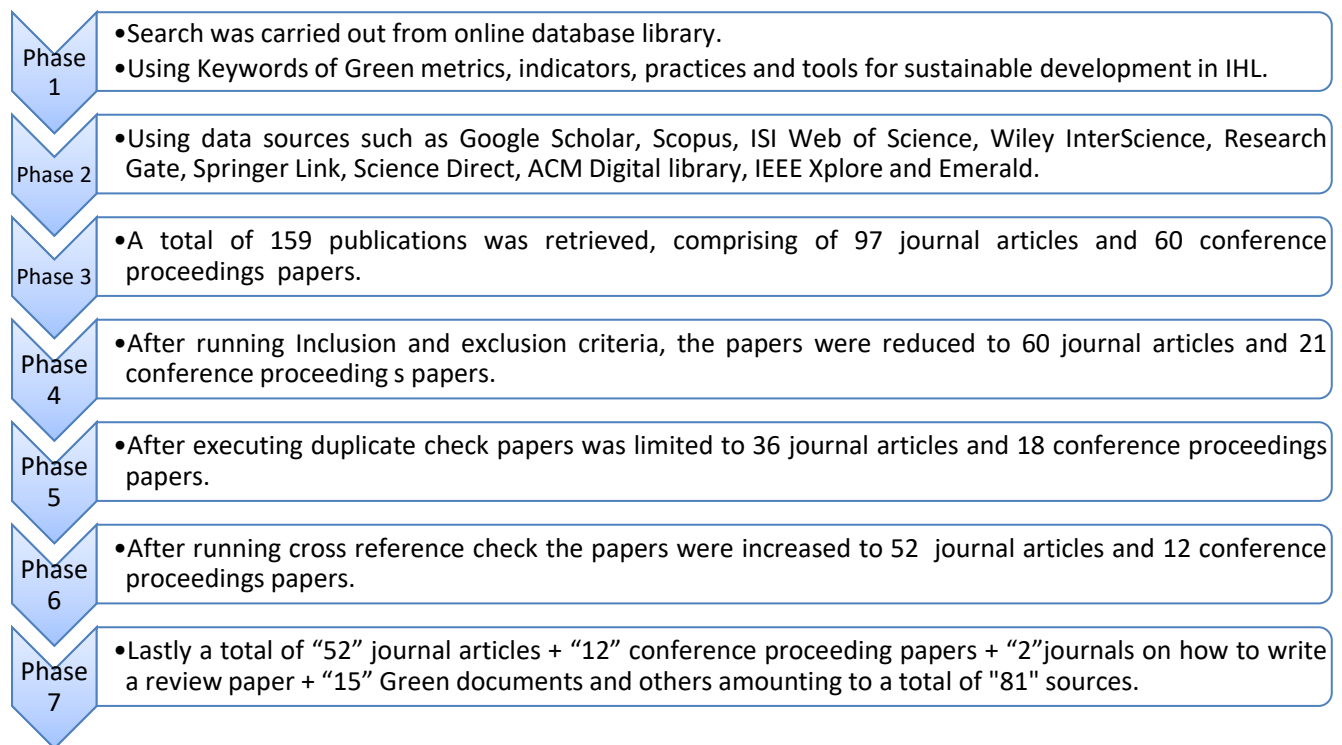


Figure 2 Paper selection process

Figure 2 shows the selected papers that comprises of published journals, conference proceedings and links to a few Green/sustainability practice documents related to university domain. Hence, papers from leading educational and other relevant sustainability journal and conference proceedings as seen in reference section of this paper was utilized in this study.

### 3. Methodology

This section present synthesis of primary and secondary data collected from Green documents and prior studies in accomplishing the objectives of the study.

#### ***3.1. Background of Sustainable Development in Institutions of Higher Learning***

The attainment of sustainable development in institutions of higher learning remains a major problem despite the prominence of sustainability (Alghamdi et al., 2017). According to Cole (2004) sustainable development in relation to university campus is defined as the national and international responsibilities to improve the health and well-being of the ecosystems and human. It vigorously involves the knowledge of the campus community in resolving social and ecological issues that they face presently and in the future. In view of this, Velaquez et al. (2005) added that sustainable development in IHL involves local or universal reduction of adverse societal, economic, environmental and health effects to satisfy the university purposes of research, teaching, stewardship and partnership towards the change of ecological lifestyles. Based on the definitions of sustainable development presented by Cole (2004) and Velaquez et al. (2005), it is evident that there is a mention of development that progresses the quality of

social life while existing within the carrying ability of facilitating the ecosystems in balancing the economic, social and environmental goals.

IHL being centers of innovation and knowledge development are the most suitable place to foster ideas for attaining sustainable development (Abd-Razak et al., 2011). Therefore, a few universities are implementing Green campus initiatives as a response to calls for sustainable development (Abdul-Razak et al., 2011b). These arguments are supported by Mat et al. (2011) where the authors mentioned that universities in Malaysia are initiating Green governance plan to provide staffs with environmental guidelines. But sustainable development problems towards social, economic and environment is becoming complex, interconnected multidimensional and as such required a systematic integrated method (Mat et al., 2011). Hence, sustainable development in IHL refers to the development of university campus societal lifestyle while not exceeding the capacity the ecosystem by balancing the social, economic and ecological goals (Kadir et al., 2012).

Furthermore, empirical literature on sustainable development has increased considerably over the years and a few studies have been published in relation to Malaysian context. But, since sustainable development means visible development that addresses the current needs without conceding the needs of imminent generations by balancing the social, economic and environmental dimensions (Hooi et al., 2012). A few university campuses in Malaysia have acknowledged the significance of sustainable development and have started to initiate Green campus governance, by promoting Green implementation and making sustainable development a priority within the university planning and development. This can be attributed to the fact that several benefits can be derived when universities balances the social, environmental and economic goals. Conversely, there are still universities who only assess sustainable development from the environmental aspect (Abd-Razak et al., 2011).

### ***3.1.1. Importance of Sustainable Development in Institutions of Higher Learning***

Sustainable development practically means, before initiating any activities, the consequences of the activities on environment and human should be considered (Kadir et al., 2012). Hence, sustainable development is practiced in order to protect a healthy and prosperous living for the present and future to come (Darus et al., 2009). According to Abd-Razak et al. (2011) sustainable development in IHL can help to;

- Encourage ecological-friendly practices and cooperation among sustainable practitioners in universities.
- Increase the wellness and productivity of the campus society.
- Enhance the campus ecological system's health in present and future to come.
- Promote research linked to environmental development to progress Green practice implementations.
- Design and implement tool for ethical decision making.
- Utilizes benchmarking to report, monitor and continuously advance campus Greening.
- Reduced available land used within the campus community.



- Decrease vehicle dependence by protecting the environment and also lessening CO<sub>2</sub> emissions.
- Diminish natural resource depletion and pollution.
- Supports public transport usage and encourages walking and cycling within short distance across campus.

### ***3.1.2. Issues of Sustainable Development in Institutions of Higher Learning***

It is disputed that one of the biggest challenges of this century is the attainment of sustainable development from theory to practical application for the benefit of all (United Nations, 1993). Hence, sustainable development in IHL is faced with several obstacles which include low significance of Green practice initiatives in the universities agenda. Moreover, there are issues such as the lack of collaboration and communication among sustainability practitioners. Therefore, this sub-section explores some of the issues that obstruct sustainability development in IHL as summarized in Figure 3.

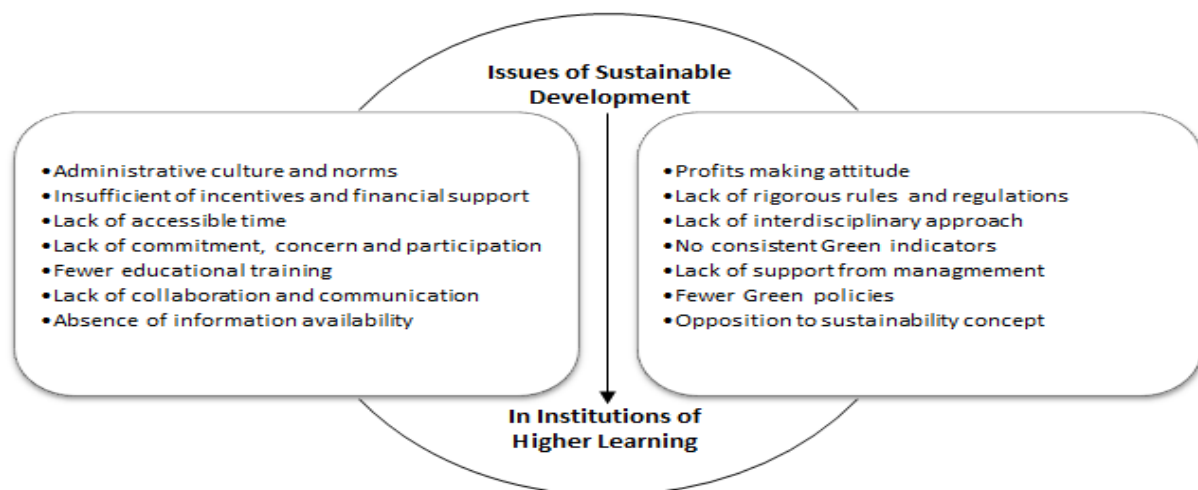


Figure 3 Issues of sustainable development in institutions of higher learning

Figure 3 depicts issues experienced by sustainability practitioners as they implement Green practices to attain sustainable development in IHL. Each of the issues is briefly discussed below;

#### ***a. Lack of Commitment, Concern and Participation***

Sustainable practitioners and decision makers in charge of sustainable development in IHL often protest about the substantial portion of the campus community that are uninformed or has no concern in sustainable development (Capdevila et al., 2002). The lack of participation and involvement among staff, students and even the surrounding communities is seen as influencer against sustainable development (Velazquez et al., 2005). Hence, campus societies do feel their participation is often insignificant such as leaving computers turned on all day, not switching off office lights when leaving for the day, and disposing waste materials in wrong bins are examples of un-ethical behaviours among universities (Kadir et al., 2012).

#### ***b. Administrative Culture and Norms***

To promote sustainable development attainment an efficient integrative administrative structure is suggested as mentioned by Velazquez et al. (2005). However, university's

administrative structure is categorized by inadequate governance policies due to dispersed management bureaucracy, and non-consistent protocols which is based on the current culture and norms of the management committee (Tilbury et al., 2011).

***c. Insufficient of Incentives and Financial Support***

Inadequate financial support is a constraint that negatively influences the initiation of Green projects in IHL (Peter et al., 2016). Moreover, due to the decelerating economy IHL are faced to reduce allocated budgets, thereby decreasing expenditures among sustainability units. Thus, budget allocated to promote sustainable initiatives are been reallocated to other primacy goals and sustainable development is not seen as a priority for many universities (Velazquez et al., 2005).

***d. Lack of Accessible Time***

Practitioners in charge of sustainable development have other crucial responsibilities within the university. Hence, less available time allocated for sustainable development also upsets the formal scheduling, assessment, and monitoring processes (Anthony Jr et al., 2018). For example time suitability for waste recycling involves two phases, which includes the distance to the waste disposal unit where waste are being dumped for collections and the time needed for recycling operations (Hamón et al., 2017).

***e. Absence of Information Availability***

Data for sustainable development is not available to the campus society for different reasons (Sonetti et al., 2016). Thus, inadequate information on how practitioners in universities can implement Green practices also limits sustainable development in IHL (Johan and Turan, 2016). Likewise, over the years practitioners in IHL found out that information on Green practice implementation are classified as private property under copyright law (Velazquez et al., 2005). Hence, there is need for provision of information on how Green initiatives can be implemented in IHL (Mat et al. 2011).

***f. Fewer Educational Training***

There is a lack of knowledge on sustainable development in the part of practitioners. Most practitioners in university domain have little or no education on how sustainable development issues can be addressed in universities (Velazquez et al., 2005).

***g. Lack of Collaboration and Communication***

Universities are currently faced with inadequate collaboration and communication which imperatively affects sustainable development goals (Sanusi and Khelghat-Doost, 2008). Moreover, practitioners are from different fields and as such they need to communicate among each other to achieve sustainable development. But, according to Velaquez et al. (2005) these practitioners rarely communicate or share data on Green practice implementation. This is based on the fact that there is often not enough collaboration and coordination among experts from different units (Abdul-Azeez and Ho, 2015).

***h. Opposition to Sustainability Concept***

Although, the concept of sustainable development has been acknowledged in leading universities across the world as supported by UI Green Metric (UI Green Metric, 2016),

sustainable development is seen by others as a very imperative issue. Thus, a few university communities are not interested in implementing Green practice (Tilbury et al., 2011). Moreover, some university management sees sustainable development as a theoretical concept that is much difficulty to attain in a real world scenario (Velazquez et al., 2005).

***i. Profits Making Attitude***

Management tend to govern university activities like a private corporation, even though there are huge differences between a campus and a business enterprise (Velazquez et al., 2005). But, based on the fact that IHL have turn out to be more bureaucratic over the last decade, business executives in universities with organizational experience mainly manage university campus operations rather than academic leaders who are more suitable for administrative position. Hence, these business executives are more interested in supporting strategies that will lead to less economic loss (Azlin et al., 2016).

***j. Lack of Rigorous Rules and Regulations***

Fewer stricter laws that promote sustainable development in IHL are seen as an issue (Capdevila et al., 2002). Thus, it is required for governmental and non-governmental associations (NGOs) to enforce regulations that successfully promote sustainable development not only in organizations but also in universities (Velazquez et al., 2005).

***k. Lack of Interdisciplinary Approach***

Realizing an interdisciplinary approach for sustainable development has also been one of the pertinent issues in IHL (Tilbury et al., 2010; Nifa et al., 2015). This statement was supported by Velaquez et al. (2005); Azlin et al. (2016) where the authors mentioned that a strategic problem that affects the attainment of sustainable development in universities is the lack of an interdisciplinary research proficient in providing solutions for social, environmental and economic dimensions.

***l. No Consistent Green Metrics***

It is presently difficult for institutions of higher learning to measure the efficiency of Green practice initiative. This is challenging due to lack of economic, environmental and societal dimension metrics (Sonetti et al., 2016). Although, several Green metrics have been proposed by prior study (Darus et al., 2009), the tangible value of these Green metrics still needs to be assessed if economic, environmental and societal dimensions are fully addressed by universities. Hence, findings from Velaquez et al. (2005) revealed that available Green metrics mainly measure the environmental dimension only and mostly ignored the economic and social dimensions.

***m. Fewer Green Governance Policies***

Green governance policies serves as guides to support IHL achieve sustainable development. These policies also outline ecological-friendly initiatives to be implemented in attaining sustainable development (Anthony Jnr et al., 2018). But, over the years there has been few Green policies initiated to govern university campus operations towards achieving sustainable development, and the available Green governance policies are not fully adhere to, hence they are not fully operational in guiding university activities (Zakaria et al., 2016).

#### ***n. Lack of Support from University Administrators***

Obtaining support from university management should not be difficult, however opposition from university's decision-maker are obstacles that affect the attainment of sustainable development due to lack of support from university administrators in integrating Green practices in their university operations (Velazquez et al., 2005).

### ***3.2. Declarations and Summits in Institutions of Higher Learning***

This sub-section aims to accomplish the second research objective (see Section 2.2.1). Sustainable development is an issue that has been discussed in many international summits and declarations particularly in educational domain such Kyoto, Thessaloniki and Tallories declarations (United Nations, 1993; Foo, 2013). Thus, due to the awareness created by these declarations on sustainable development, institutions of higher learning have paved the way for Green campus governance initiatives in universities across the world (Nifa et al., 2015). Therefore, several declarations has been proposed over the years, among these declarations the Stockholm Conference on the Human Environment (UNEP, 1972) was initiated in 1972 as the first declaration that formally ascertains the role of universities in progressing sustainable development at global level. The next declaration was the Belgrade Charter in 1976 and the Tbilisi Declaration in 1977 which was organized by the world's first Intergovernmental Conference on Environmental Education hosted by UNESCO in collaboration with the UNEP (Reza, 2016). Next, is the popularly known "Brundtland Report Our Common Future" initiated in 1987 in the United Nations Conference on Environment and Development to promote sustainable development (Brundtland, 1987; UNSD, 1993).

Likewise in 1990, 300 universities from 40 countries came together to establish the Talloires Declaration in France, which comprises of a "Ten points action plan" for implementing sustainable development aimed at creating environmental awareness literacy in research, operations and teaching in universities (UNESCO, 1990). In addition, Agenda 21 was initiated in the 1992 at the Earth Summit in Rio de Janeiro as a comprehensive program that highlights societal consumption; technological development and population growth as the main forces of environmental change. Agenda 21 further summarized steps required to decrease inefficient and wasteful consumption lifestyle while promoting sustainable development (United Nations, 1992). In 1997, Kyoto Protocol treaty declaration was proposed to lessen emissions of Greenhouse gases from developing countries (Reza, 2016). Similarly, the International Sustainable Campus Network was founded in the year 2007, as an association that provided knowledge sharing medium for universities around the world in attaining sustainable development. To date, the association has up to 60 participating universities from all areas of the world, in which Universiti Malaysia Sabah (UMS) and University of Malaya (UM) are one of the participating universities from Malaysia (Ting et al., 2012).

Next, in December 1991 leaders of 33 universities gathered in Halifax, Canada to address the role of universities concerning the natural environment in regards to sustainable development (Ulkhay et al., 2016). Subsequently, in 2002 the World Summit on Sustainable Development initiated in Johannesburg identified Water, Energy, Health, Agriculture and Biodiversity (WEHAB) as five important components required in improving societal lives and

people's well-being while protecting the present vulnerable ecosystem from being compromised (United Nations, 2002; UNCSD, 2012). Among the declarations presented above a few universities have responded to addressing the issues of sustainable development by signing declarations and have made voluntary decisions on implementing ecological-friendly initiatives towards Green campus initiatives. According to Zakaria et al. (2016) these Green initiatives are consequently based on the universities' goals and vision towards sustainability. The last declaration is the FEE Eco-Campus programme which began in Russia during 2003 an international award agenda that directs institutions on their sustainable practice. The declaration provides a model that aids sustainability integration within campus life to support Green transformative thus helping universities to enhance their curriculum (ecoschools.global, 2019)

### ***3.2.1. Green Standards Adopted in Institutions of Higher Learning***

A few universities in Malaysia are currently adopting Green initiatives, environmental protection guidelines such as World Green Building Council Congress, Leadership in Energy and Environmental Design (LEED), Sustainability Tracking Assessment and Rating Systems (STARS), Eco-Management and Audit Scheme (EMAS), ISO 14001, and UI Green Metrics for the sole purpose of achieving sustainable development within their university campus. Accordingly, in 2005 the World Green Building Council Congress took place in which mayors of 50 of the world's largest cities endorsed an agreement that all new metropolitan buildings are to be subjected to Green building facility evaluation systems by 2012. Malaysia and 178 countries across the world signed the memorandum on acceptance and application of sustainable development (Darus et al., 2009). But, the Green building initiative established by World Green Building Council Congress has been criticized over the years for not being able to support sustainability as it lacks a continuous and systematic campus quality enhancement for ecological graphical impact assessment (Ulkhay et al., 2016).

Similarly, to assess Green buildings facilities, LEED was inaugurated by the United State Green Building Council in the year 2003. The LEED standard has been applied as a practical standard that assess various features of university's buildings location, energy consumption, water utilization, atmospheric condition, materials and natural resources consumption, innovation design, and lastly indoor environmental quality (Aljerf and Choukaife, 2016). Next, STARS was established in 2006 for universities in attaining sustainable development by addressing three main classifications which include operations and administration, education and research, and lastly finance (Kwami et al., 2014). STARS which is one of the most useful standard adopted by IHL is mostly suitable for universities in developed countries as mentioned by Ulkhay et al. (2016). Likewise, EMAS was adopted by universities to rate the ecological targets of universities (Ulkhay et al., 2016).

Furthermore, the next standard adopted by Malaysia IHL is ISO 1400 which has been utilized since 2004 by universities across the world in achieving sustainable development based on environmental management goals. In Malaysia ISO 1400 is presently being adopted by Universiti Putra Malaysia (UPM) which is currently the most Green University campus in Malaysia as rated by UI Green Metric (UI Green Metric, 2016). The ISO 14001 standard is a

practical tool widely used to achieve sustainable development by guiding institutions in controlling the impact of their operations and activities on environment, and acquiring external certifications for Green practices implemented (Foo, 2013). But, according to Ulkhaq et al. (2016) ISO 14001 has been criticized for its lack of economic and social initiatives of sustainability. The next standard is the UI Green Metrics ranking was developed by the Universitas Indonesia (UI) in 2010. Currently, the UI Green Metrics ranking comprises of over 516 universities across 65 countries from every continent in the world. The web-based tool evaluates university's sustainability based on a conceptual model that comprises of environment, economy and equity (UI Green Metric, 2016).

### 3.3.Green Campus Governance Policies in Malaysia Institutions of Higher Learning

This sub-section describes universities selected for this study, where each university was selected because they presently implement Green practices and also have a Green/sustainability center in their campus. Moreover, the sixteen universities are leading IHL in Malaysia that implements Green practices. They walk the talk and contribute to the attainment of sustainability in their universities. Thus, Table 4 summarizes the Green governance policies of the selected universities.

Table 4 Descriptive analysis of Green governance policies in Malaysia universities

Universities	Green Governance Policies Description
<b>UTM-</b> Universiti Teknologi Malaysia	UTM is a leading Engineering, Technology and Science University with an innovation based sustainable environment. The university campus sustainability was officially lunched on April 2011 (Ishak et al., 2012; Ting et al., 2012). The university sustainability policy was founded in 2010 ( <a href="http://www.utm.my/sustainable/our-policy/">www.utm.my/sustainable/our-policy/</a> ) later accompanied by the launch of UTM Campus Sustainability in 2011 (Ahmad et al., 2012). The university's sustainable development vision aimed at realizing Green lifestyle as personal and common culture providing progressive initiatives to future generation for them to imitate for continuously improvement (Zen et al., 2016).
<b>UUM-</b> Universiti Utara Malaysia	UUM sustainable development is headed by the campus maintenance office. The office creates awareness for Green practices within the university community (Osman et al., 2014). Hence, the sustainability pursuit of the university is embodied in the university's 'UUM Welcome Centre' which is tasked to integrates Green and energy proficient building features, as well as the design of a governance blueprint that includes Green elements for improving campus facilities (Nifa et al., 2015).
<b>UPSI -</b> Universiti Pendidikan Sultan Idris	UPSI is a leading university in Malaysia that serves to mainly train educate teacher in the area of national education. Green practices implementation in UPSI is viewed as an important initiative for providing prospective teachers with the sustainability responsiveness and improve their ability to adopt these strategies (Isa, 2016).
<b>USM-</b> Universiti Sains Malaysia	USM is renowned as sustainability led university and world class university for sustainability. The university's mission is aimed at transforming higher education for sustainable tomorrow (Abib et al., 2017). In 2009, the university initiated a sustainable development roadmap headed by Center for Global Sustainability Studies (CGSS) aimed for capacity building to produce graduates who are equipped to resolve sustainability issues within their society and the world (Foo, 2013). The university sustainability focuses mainly on water, energy, health, agriculture, and biodiversity drafted by United Nations for publicized sectors (Kadir et al., 2012).
<b>UKM-</b> Universiti	Sustainable development concept was established in the university in the year 1994 by Institute of Environmental and Development also known as LESTARI. The institute initiated and manages environmental education towards sustainable development (Darus et al., 2009). Hence, the university

Kebangsaan Malaysia	management is employing holistic methods for investments and decision making towards sustainable development. The sustainability principles at the university are implemented based on the Green practice globally declarations such as Agenda 21, hence the universities dedicated to fully implement Green practices for sustainable development by 2020 (Reza, 2016).
<b>UiTM-</b> Universiti Teknologi MARA	UiTM founded a sustainability committee to provide a medium that facilitates the development of suitable procedures and policies for sustainability attainment within the university (Hashim et al., 2013). The committee developed a framework for implementing socially, financially feasible and environmentally sound practices within the university campus (Kamal et al., 2015). The committee also focused to implement approaches that can be implemented for sustainable development attainment (Rusman et al., 2013).
<b>UM-</b> Universiti Malaya	The university's sustainability value involves social responsibility and is mostly centered on the society in respect to the natural environment. The university aims to decrease energy consumption (Osman et al., 2014). Thus, in 2012 a sustainability department called "UMCARES" was established which comprises of practitioners who work with the Malaysian Green Technology Corporation alongside the university's sustainability science cluster group aimed at developing a low carbon cities framework for sustainable development (Abd-Razak et al., 2011).
<b>UPM-</b> Universiti Putra Malaysia	UPM is mostly concerned with the social dimension of sustainability. Besides in the university the concept of environmental and economic sustainability has also been embedded over the years (Shari et al., 2006). Sustainability development in the university is headed by the Centre of Professional Development Services and Continuing Education. The university teaches sustainable development issues in various faculties (Saadation et al., 2009). Based on data published by UI Green Metric, UPM is the most Green University in Malaysia (UI Green Metric, 2016).
<b>IIUM-</b> International Islamic University Malaysia	IIUM Green strategies are based on the Energy Star standard which is a common label used to recognize and promote energy competent products (Ahmad et al., 2013). The university also adopts the Electronic Product Environmental Assessment Tool (EPEAT) which is a tool deployed to provide guideline for rating product environmental impact based on Carbon Footprint and e-waste generated at the end of the product usage (Ismail et al., 2016)
<b>UMP-</b> Universiti Malaysia Pahang	UMP is committed to the development of Green human capital and technology to address the needs of organizations as well as to contribute towards sustainable development in Malaysia. UMP is actively involved in research that contributes to sustainable development for protection of the natural environment (Johan and Turan, 2016). The university is commitment to reduce waste produced within the university campus. In line with these obligations, a systematic waste control programmes, deploying the 3R concept (Reduce, Reuse and Recycle) was established in 2006 by the university management (mygreen.ump.edu.my, 2016).
<b>UMS-</b> Universiti Malaysia Sabah	UMS aims to achieve balance between campus development and ecological sustainability. Hence, the center for eco-campus initiative was launched on February 2013 to support the aforesaid strategies with regard to sustainable water resource management (Ayog et al., 2015). The center for eco-campus incorporates environmental considerations in the university's operations by addressing domestic, national and international environmental challenges in cooperation with stakeholders (UMS, 2016).
<b>UniMap-</b> Universiti Malaysia Perlis	UniMap implement a Green campus practices for sustainable development which is in line with the university's community goal of improving the efficiency of conserving the natural environment, efficient energy usage and sustaining resources utilization for a healthy and favorable campus lifestyle (Elmuradov et al., 2015). The university believes that the implementation of Green practices within its campus can bring profit to the institution in terms of efficient utilization of natural resources in ensuring eco-friendly practices. Hence, the university's Green campus team developed a policy plan of five years to address human, weather, water, energy, building, soil, food, transport, purchase and waste (UNIMAP, 2016).
<b>UCSI University</b>	UCSI sustainable development initiative was established by the University in September 2008 to assess carbon emission within the university campus with the aim of decreasing the ecological impact caused by its campus operations (Hooi et al., 2011). The Green initiative in the university is aligned with the university's goal to implement campus wide Greening initiative. The university Green campus initiatives

	was organized by the corporate affairs teams which aims to diminish negative environmental effect caused by the university (Hooi et al., 2012).
<b>Taylor University</b>	For attaining sustainable development, Taylor University acts with integrity and a code of conduct that reflects responsibility. The university adopts a work culture that encompasses sustainable development operations for the society by delivering measurable environmental effect. The university sustainability center addresses issues that limit the university from achieving sustainability, hence creating Green initiatives to help enhance Green practices in the university campuses thereby promoting sustainable development (Taylor University, 2016).
<b>Sunway University</b>	The university lunched a center for sustainable development (Jeffrey D. Sachs) which aims to progress the international expertise needed to facilitate Malaysia and Asia forward in protecting the environment. The center on sustainable development inspires to be a hub to extend practical knowledge by systematically integrating knowledge across sustainable development in order to create a world class center that will educate students, practitioners, policy leaders and decision makers in enhancing responsible stewardship of natural environment in including improvements for economic dynamism (Universitysunway, 2016).
<b>Monash University Malaysia</b>	Monash University Malaysia aims to contribute in addressing climate change by suggesting sustainable development in business organization and the society at large. The university acknowledged the prominence of sustainable development, hence is committed to addressing issues related to sustainable development at the campus level (Monash.edu, 2016). The Green Steps program was initiated by the university to create a medium to develop the knowledge and governance potential of students, practitioners and staffs for producing sustainability solutions at the university and in local based industries (Greensteps.edu, 2016).

## 4. Results

### 4.1. Factors Influencing Sustainable Development In Universities

This sub-section aims to presenting factors to be considered towards providing an effective guide for the attainment of sustainable development and to serve as an effective Green campus governance tool for monitoring and evaluating existing ecological-friendly practices being adopted in IHL. Therefore, this sub-section identifies critical factors necessary for attaining sustainable development in universities. Accordingly, the derived factors are discussed in Table 5.

Table 5 Factors necessary for attaining sustainable development in universities

<b>Green Indicators</b>	<b>Description</b>
1. Pollution control	A Green campus design should offer protection to the ecosystem. Hence, environmental-friendly design standards should be based on the incorporation of architectural component, engineering practices and technology usage that produces less pollution (Amran et al., 2010). It also involves the deployment of environmental consideration, aesthetic values, political social and morale consideration when designing building within campuses (Darus et al., 2009)
2. Protection and safety of society	Campus walk should provide variety of topographies for creating sense of protection and safety for social activities (Foo, 2013). The campus community should be safe from crime, and pedestrian-friendly towards a sense of security. Thus, practitioners should incorporate procedures that support social assimilation among its community for public well-being (Zanariah and Norsidah, 2014).
3. Food waste management	This factor aims to diminish solid and food waste generated within campus cafeterias by implementing resource recovery and recycling which moderate CO <sub>2</sub> emission generated (Ramli et al., 2014). Hence, CO <sub>2</sub> emission can be reduced by enlightening campus community towards utilizing eco-friendly containers (Bantanur et al., 2015).
4. Biodiversity conservation	Conservation of forest reserved within university campus should be encouraged. Rehabilitation and maintenance initiatives of forest should be given due concern towards stabilised the ecosystem (Darus et al., 2009). This factor addresses sustainable landscape, lawn minimization, pest



	management, pesticide control and native plants protecting against invasive plants (Saadatian et al., 2013).
5. CO <sub>2</sub> emission management	There is need for data towards the quantification of CO <sub>2</sub> emission. Hence, this factor is important in the planning and analysis of achieving a Green energy process as this will facilitate efficient monitoring of progress achieved towards the implementation of CO <sub>2</sub> emission decrease from energy source (Abdul-Azeez and Ho, 2015; Anthony Jr, 2019). Moreover, policies that aim to achieving low carbon emission in university campus should be put forward through climate changes governance strategy towards universities considering their carbon footprint (Anthony et al., 2017).
6. Transportation management	Physical development across university campus has resulted to the dependence on vehicles as a mode of commuting which has resulted to traffic congestion, air quality reduction, and gradual loss of campus sustainability. Therefore, it is vital to create a positive impact to the natural environment since motor vehicles are major cause of air pollution in campuses (Darus et al., 2009). Thus, campus societies are encouraged to use bicycle which help reduce carbon emissions and traffic congestion (Rusman et al., 2013). Kadir et al. (2012) also suggested public transportation and car-pooling as a medium for campuses to achieve clean environment.
7. Technological infrastructure deployment	Practitioners are required to deploy technologies and systems today that will provide infrastructure that will be able to adapt to future technologies advancements (Anthony et al., 2017). Thus, technological infrastructures should also be installed bearing in mind their future applicability (Mat et al., 2011). Technological infrastructures or equipment and Information and Communications Technology (ICT) can also lead to energy conservation when university campuses install energy proficiency light bulbs and sensors to switch off unused lighting autonomously (Ting et al., 2012; Ravesteyn et al., 2014).
8. Energy management	CO <sub>2</sub> emission from fossil based fuel energy usage is a global issue. Although, energy is vital and there cannot be campuses without energy consumption (Sapri and Muhammad, 2010). However, reduction of energy usage is important to decrease global warming (Abdul-Azeez and Ho, 2015). Thus, decreasing energy usage minimise cost and also helps lessen the impact of campuses thereby limiting CO <sub>2</sub> emission that intensifies global warming (Bekhet and Harun, 2018).
9. Waste management	This factor signifies the need for managing the waste generated within campus operations by implementing waste recycling (Kristanto et al., 2014), which is the recovery of unwanted materials through their reuse, either for other purposes or their original purpose (Zain et al., 2012). Hence, Green governance policies should include solid waste management initiatives (Sonetti et al., 2016). Waste management also includes taking waste off campus to a strategic dump site, for partial reuse or full recycling of the waste (Junior et al., 2018).
10. Rain water harvesting	Rainwater harvesting is aims to resolve the issue of unlimited access to freshwater supply by supplementing existing water sources from water derived from rain fall. Rainwater harvesting has been considers to be a form of Green practice due to its contribution to sustainable water provision (Ayog et al., 2015; Ulkhaq et al., 2016). Besides, rainwater harvesting initiatives involve the installation of wastewater collecting and treatment plant to recycle used water within the university (Kristanto et al., 2014).
11. Green building facilities	Sustainable development in campus calls for university design and planning committee to support Green buildings that reduce water and energy consumptions while having nominal carbon footprint. Besides, these Green buildings support universities in having better lighting, improved ventilation temperature control and enhanced indoor air quality (Nifa et al., 2015). The buildings should be able to utilize less energy to accomplish more for the occupants (students, staffs and practitioners). Hence, practitioners should carry out retro-commissioning quality check on older campus buildings to ensure these building are efficiently operational (Mat et al., 2011).
12. Top-management involvement	At the moment Malaysia universities are aggressively pursuing sustainable development (see Table 4). The management committee is responsible to set the Green governance polices, processes and procedures for implementing, reviewing and maintaining university campus policies towards achieving sustainable development (Mat et al., 2011). Besides, it is obvious that management support and commitment towards resources allocation, both in terms of funding and personnel is significant and serves as the preliminary strategy for operational Green practice implementation (Ting et al., 2012).
13. People's contribution	The campus community (student, lectures, staffs, practitioners and stakeholders) have a role to play in supporting the university campus achieve sustainable development (Anthony et al., 2018). Hence, the campus society has to change the way they make decision relating to the natural environment. But, campus community's decision on implementing Green practices entails change in attitude towards the eco-system (Rahim et al., 2014).

14. Budget allocation	This factor is very important in facilitating sustainable development, although findings from researchers such as Kadir et al. (2012) presented that budget allocated to support Green practices in universities is limited, this fact was also supported by Hamon et al. (2017) who mentioned that economic crisis faced by universities has made it a challenge to prioritise budget to support environmental protection. Hence, more funds should be directly for Green initiatives, in promoting Green policies within universities (Bantanur et al., 2015).
15. Information management	Universities are faced with the lack of information on how they can implement Green practices as such lack of precise knowledge leads to energy wastage also prohibit energy conservation practice within the university (Ting et al., 2012). Thus, the provision of information about environment can change the attitude of campus community toward the eco-system which in turn influences their behaviour (Saleh et al., 2011).
16. Green procurement	Green procurement is the practice of buying environmentally friendly services and products by practitioners when they outsource equipment needed in the university (Bantanur et al., 2015). In attaining Green procurement it is mandatory to purchase only product that has Green label and are ecological-friendly. Practitioners can purchase recycled reusable and durable material such as rechargeable batteries and insisted on using recycled paper for printing (Kadir et al., 2012).
17. Partnership and collaborations	Achieving sustainable development in universities requires partnership with governmental private and NGOs (Isa, 2016). Thus, universities can collaborate with external associations' for research and development in commercialization Green initiatives and programs. The collaboration can either be with domestic, national or globally (Mat et al., 2011). University can partner with other university in attaining sustainability, hence relevant Green practice implementation training materials can be adopted from other universities that have successfully adopted similar practices (Ting et al., 2012).
18. Research & development (R&D)	R&D is a crucial step in the inventing science. Thus, R&D in universities provides campus community with an understanding of the critical environmental problems the world presently faces. It presents an agenda on the problems, possible solutions and the role that the campus society have in reducing negative environmental effects (Shari et al., 2006). In attaining sustainability, there is need to educate future generations towards this concept (Akib et al., 2017).
19. Green Lifestyle	This factor entails the need for practitioners to encourage initiatives such as photocopying and printing on both sides of the paper (Kadir et al., 2012). Also, paperless initiative as a strategy to lessen waste should be supported as a life style across the campus by utilizing web based system (Akib et al., 2017). These initiatives can help reduce paper, since paper is one of the most energy demanding and most utilized materials and paper industry is the 5 <sup>th</sup> largest industrial energy consumer, amounting to 10% of all industrial energy utilization (Zen et al., 2016).
20. Agricultural preservation	Agriculture is important in various areas of life as also in the university, hence there is need to reduce landscaping by avoiding lawns, planting more trees and moderate cutting of trees. This will be useful for flood management and drought prevention (Bantanur et al., 2015). According to Sonetti et al. (2016) agricultural part of the university involves area on campus covered in vegetation in the form of forest plantation.
21. Health and wellness	This factor represents the university focus on the wellness of the campus community (students, teaching staff, non-academic, and administrative technicians) that facilitates all activities undertaken in terms of the fitness and quality of life (Sonetti et al., 2016). Thus, healthy practices can be applied in the offices by having appropriate indoor living plants in offices (Jegatesen and Koshy, 2013). Lastly, smoke and drug free campaigns should be disseminated within the university.

Table 5 depicts the factors derived from sustainability documents and existing literatures on sustainability attainment in university campuses. The factors provide Green information that supports sustainability practitioners' decision-making in addressing issues related to environmental degradation. Besides, the identified factors provide a tool to be employed for educating universities on issues relating to sustainable development.

#### 4.2. Proposed Green Campus Governance Model

This sub-section aims to present the concept of Green campus governance as one of the approach for attaining sustainable development in fostering environmental economic, and

social development. A few university campuses in Malaysia (see Table 4) are implementing Green by deploying ecological-friendly materials in their daily operational activities within their campuses. Although, it is evident that Green initiatives had been undertaken by IHL in Malaysia where some universities have contributed towards energy saving, ethical waste management, CO<sub>2</sub> reduction, water management, etc. However, there are still issues that influence the attainment of sustainable development in IHL as presented in Section 3.1.2. Thus, there is need for an approach that provides an interdisciplinary collaboration among sustainability practitioners and also provides information on important factors to be considered by IHL in attaining sustainable development. Therefore, this study proposes a Green campus governance model as shown in Figure 4.

Figure 4 depicts the proposed Green campus governance model which extends collaboration among sustainability practitioners by providing incorporated data on Green metrics that influences sustainable development in institutions of higher learning. Besides, the proposed Green campus governance model comprises of factors which are based on the economic, social and environmental constructs of sustainability. The model provides an interdisciplinary communication among practitioners by providing information on the Green factors to be considered for Green campus governance toward sustainable development. Moreover, the Green campus governance model can be employed as master plan to guide university campus development. In addition, the model can be employed as an assessment tool for benchmarking sustainable development in Malaysia university campuses and beyond.

Sustainable Development Attainment in Institutions of Higher Learning		
<p><b>Environmental</b></p> <ul style="list-style-type: none"> <li>-Pollution Control</li> <li>-Food waste management</li> <li>-Biodiversity conservation</li> <li>-CO<sub>2</sub> emission management</li> <li>-Waste management</li> <li>-Agricultural preservation</li> <li>-Transportation management</li> <li>-Energy management</li> <li>-Rain water harvesting</li> <li>-Green building facilities</li> </ul>	<p><b>Economic</b></p> <ul style="list-style-type: none"> <li>-Budget allocation</li> <li>-Green procurement</li> </ul>	<p><b>Social</b></p> <ul style="list-style-type: none"> <li>-Protection and safety of Society</li> <li>-Technological infrastructure deployment</li> <li>-Top-management involvement</li> <li>-People's contribution</li> <li>-Information management</li> <li>-Research and development</li> <li>-Partnership and collaborations</li> <li>-Health and wellness</li> <li>-Green Lifestyle</li> </ul>

Figure 4 Proposed Green campus governance model

## 5. Discussions and Implications

### 5.1. Discussion

Sustainable development means development that meets current needs without compromising the needs of future generations by focusing on concurrently addressing environmental, social and economic issues (Brundtland, 1987). In recent years, sustainable

development has become an important part of many corporate social responsibility agendas. Accordingly, this study carried out a theoretical analysis grounded by primary data from Green practice documents and secondary data from theoretical review of prior studies. Thus, findings from this study present the importance and issues of sustainable development in IHL by describing how attaining sustainability development in is becoming a critical issue across the world similar to prior study (Velazquez et al., 2005; Bekhet and Harun, 2018). However, to support sustainability practitioners in implementing Green practices a comprehensive measures should be put in place to change campus community, campus administrators, and management mind-sets specifically towards ensuring that they support Green practices polices in their universities (Nifa et al., 2015; Akib et al., 2017).

Furthermore, this study reviews existing standards and declarations initiated across the years to support IHL attain sustainability. Besides, findings from research reveal that a few Malaysia universities are implementing Green practices towards achieving a low carbon society to address issues related to climate change, global warming, and environmental degradation (see Table 4) as stated by Hafezi et al. (2017) Klufallah et al. (2019). This finding is similar to results from prior studies (Saleh et al., 2011; Hamon et al., 2017). Simultaneously, universities in Malaysia are deploying Green governance policies to incorporate the themes of Agenda 21 within their academic syllabuses as well as campus-based activities as stated by (Kadir et al., 2012; Akib et al., 2017). In particular, a few universities such as Universiti Sains Malaysia have introduced sustainable development issues into their curricula for teaching, learning, and research (Ravesteyn et al., 2014). Institutes and centers have been established in different universities aiming to set the target to achieve sustainability (Reza, 2016).

Besides, findings from this study as corroborated by Reza (2016); Junior (2019) indicates that considerable efforts had been put forth by the government to include sustainable development agendas in Malaysia universities. As a result, a satisfactory proportion of academic courses have been devoted to sustainability studies. Although, the dimensions of sustainable development have been addressed separately in universities, the integration and coordination of the three dimensions (social, economic and environment) are not sufficiently accomplished (Ahamad and Ariffin, 2018). This finding is similar to findings from prior study (Akib et al., 2017). Therefore, finding from this study identified the critical factors needed in attaining social, environmental, and economic goals of sustainable development in universities.

Furthermore, this study proposed a Green campus governance model developed based on identified factors (see Table 5). The model provide guide to practitioners in implementing Green practices for sustainable development by embedding Green initiatives for decrease of natural resources usage, competent human resources requirement, educating people and incentives provision as suggested by Shari et al. (2006); Zen et al. (2016). Besides, the model provides an action plans that ensure that university objectives are implemented with appropriate capital, human resources and in a shorter period of time. Accordingly, findings from this study reveal that IHL in Malaysia are inculcating Green practice behaviour among their staffs and mostly students since they are the future administrators who will implement and guide Malaysia universities with better Green practice initiatives that will definitely benefit both the institutions and the country.

## **5.2. Implication for Policy**

University campus involves several operations and activities each with implications to the ecological-system that directly or indirectly impact the environment but over the year campus operations have been generally overlooked in terms of environmental and social responsibility. Malaysia as a country has experienced growth over the years. The educational sector has also contributes to the Malaysia's economy. Therefore, Malaysian government has continuously invested on the educational sector. According to Reza (2016) institutions of higher learning in Malaysia comprises of 20 public universities, 41 private universities and university colleges, and lastly 485 private colleges. But as the year's progresses, sustainable development has affected the current governance, structures as well as effective practices in universities. Hence, it is argued that IHL can change the world through education and also develop young minds towards addressing the challenges of sustainable development.

As a result, these universities presented in Table 4 and a few others in Malaysia have embarked on voluntary and committed initiatives to incorporate sustainability into their campus daily operations, to attain clear policies, goals and strategic planning in achieving Green campus governance policies. As such it is visible that universities in Malaysia have taken Green initiatives to transform their campus with sustainable development as their dominant agenda. Accordingly, findings from this study depicts how leaders of IHL and their academic counter parts across universities in Malaysia can integrate sustainable development as an educational and institutional goal in creating a just, ecologically, equitable and sound future. As a result, these universities (see Table 4) in Malaysia are committed to implement Green initiatives into their campus operations, by making clear governance policies and strategic planning towards achieving Green campus governance for sustainable development. Additionally, finding from this study is mostly concerned with assisting practitioners in universities implement a holistic Green campus paradigm towards sustainable development.

## **5.3. Implication for Practice**

The study proposed a Green campus governance model for promoting sustainable development in IHL. According, this study provide practical implication which include policies defined across the three dimensions of sustainability. The social dimensions aims to develop a healthier society with openness in diminishing barrier, as well as to initiate a fair society, through respect, integrity and ethical norms so as to enhance public oneness for harmonious living. Whereas, the economic dimension aims to realize cost efficiency by implementing Green infrastructure and facilities, promoting economic viability, optimization of university campus assets in realising efficacy in operational management of natural resources and equipment as well as to safeguard the successful implementation of Green governance policies. Lastly, the environment focuses on implementing low carbon initiatives within the university campus and also aims to improve eco-friendly initiatives through the decrease of water, and energy consumption and also diminish pollution.

The implication of sustainable development in universities can be regarded as a transformative and integrative approach which requires a Green campus governance model that

infuses an interdisciplinary approach in creating a balance of interaction between the campus community and the natural environment. Practical implication of this study is attributed to sustainable development in universities by designing a policy model that comprises of factors aimed at promoting ecological-friendly practices that can lessen energy and water consumptions while having nominal carbon footprint. The Green governance model also suggested how practitioners in universities can implement energy efficient Green buildings facilities that have better lighting, efficient temperature control, enhanced ventilation and better indoor air quality which contribute to healthy environments by reducing hazardous air pollutants that cause respiratory illness. Beside, this study provides an agenda for managing energy conservation efficiency in enhancing resource conservation, waste management and recycling, water management and water usage conservation which can be enhanced through the collection of rain water for sustainable development in universities.

## **6. Conclusion**

Sustainable development refers to improvement that progresses the quality of human life while caring for the ecosystems by balancing the economic, environmental and social goals. The idea of sustainable development is based on the correlation on how human activities influence the integrity of the natural systems. Thus, for any higher education to be ecological it requires enhancement and conservation of its natural resources, addressing not only the economic growth but also environmental and social development. At the moment Green initiatives is being undertaken in a few universities in Malaysia (see Table 4) towards achieving sustainable development. Conversely, a few universities believes that they can achieve sustainable development by adopting environmental management guidelines such as LEEDS, STAR, EMAS, ISO 14001, UI Green Metrics etc. while others consider that they may have addressed the challenge of sustainability through signing of national or international declarations such as The Stockholm Declaration Talloires Declaration, Agenda 21 Kyoto Protocol treaty etc., but these responsive efforts may lead to an inefficient and may not guarantee sustainable development attainment. However, issues related to sustainable development are becoming difficult, multidimensional and interconnected and hence requires a systematic and integrated method for governing environmental issues such as climatic changes and global warming.

Therefore, this study utilized data from literature review and Green document in describing the importance and issues of sustainable development in IHL. This study contributes to the body of knowledge by reviewing existing declarations and summits initiated across the years that have been carryout to support IHL towards sustainable development attainment. Moreover, this study explored universities in Malaysia that currently implementing Green practices for sustainable development. Findings from this study further identified the factors to be considered for sustainable development attainment. Moreover, a Green campus governance model was designed based on the identified factors as assessment indicators to be employed by universities which are importantly aligned with the dimensions of sustainability.

Accordingly, the model extends the theory and practice of sustainability by providing collaboration among practitioners in universities to provide information on factors needed in establishing a baseline to reduce carbon emission rate within the university. However, this study is faced with few limitations, which is based on the fact that data was not collected from participants to validate the factors in the proposed model. Thus, only data from prior studies and Green document was utilized in this study. Therefore, future work will involve the adoption of qualitative research method using interview to verify the identified factors presented in the model. Survey data will also be collected from the explored sixteen Malaysia universities described in this study to empirically validate designed Green campus governance model.

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Post-print version of the paper by Anthony Junior., B. in *World Review of Science Technology and Sustainable Development*, 16(2) (2020) 141-168 <https://doi.org/10.1504/WRSTSD.2020.10968>

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